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Winter 1969

OUR PUBLIC LANDS

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Slow Burn For Apollo

Page 5



U.S. DEPARTMENT OF THE INTERIOR
Stewart L. Udall, Secretary

BUREAU OF LAND MANAGEMENT
Boyd L. Rasmussen, Director

As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities for water, fish, wildlife, mineral, land, park, and recreational resources. Indian and Territorial affairs are other major concerns of America's "Department of Natural Resources."

The Department works to assure the wisest choice in managing all our resources so each will make its full contribution to a better United States—now and in the future.

OUR PUBLIC LANDS, the official publication of the Bureau of Land Management, U.S. Department of the Interior, is issued in January, April, July, and October.

Ed Parker, Editor

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Single copy, 25 cents. Subscription price, \$1 a year; 25 cents additional for foreign mailing.

The printing of this publication was approved by the Director of the Bureau of the Budget, February 12, 1968.

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The Cover



Yucca blazes brightly in south central New Mexico as BLM cooperates with Apollo 7 space mission.

Photo by Doyle Kline

HIGHLIGHTS

Olympic Heavyweight Boxing Champion is Former BLM Job Corpsman

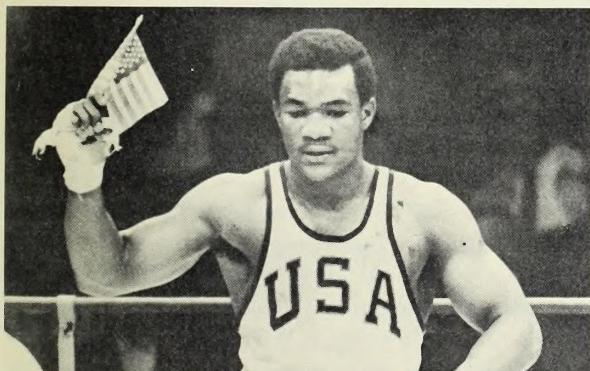
He was once a high school dropout in Houston, Tex., with little hope of getting anywhere, but today George Foreman, 19, is Olympic heavyweight boxing champion and recipient of the first Job Corps Award of Achievement.

It was the Job Corps that gave Foreman both his high school diploma and his first taste of serious boxing. This training led him to the Olympics at Mexico City last October where he defeated Russia's Ionas Chepulis to bring the United States its 45th gold medal. Chepulis was a three-time Olympic gold medal winner.

The Job Corps Award of Achievement recognizes this victory as well as Foreman's outstanding citizenship; in a typical gesture, he waved a small American flag in the ring after winning. The Job Corps award will be conferred annually to an outstanding corpsman on the anniversary of Foreman's victory.

Foreman first came to the Job Corps at BLM's Fort Vannoy Conservation Center at Grants Pass, Oreg. He later moved on to the Parks Job Corps Center at Pleasantville, Calif., where he began boxing under Nick "Doc" Broadus. Foreman tried out for the Center boxing team and by April 1967 had won the National AAU heavyweight title.

Foreman recently disclosed his plans to turn professional and work his way up to the national heavyweight crown. He hopes also to go to college.



George Foreman: a man on the way up.

Changes in Grazing Fees Proposed

Secretary of Agriculture Orville L. Freeman and Secretary of the Interior Stewart L. Udall have proposed changes in current methods of determining fees for livestock grazing on National Forests and public lands under their administration.

The action is in accordance with Bureau of the Budget instructions that call for Federal agencies to obtain fair market value for services and resources provided the public. Results of a 2-year study, during which 10,000 ranchers were interviewed and more than 14,000 questionnaires were collected, indicate that fees now charged livestockmen are below the market value of forage. Grazing permits issued by BLM and the Forest Service total about 47,000.

The Secretaries propose that a common base of \$1.23 per animal unit month, adjusted by an annual forage value index, be used to calculate fees for livestock using the National Forests and public lands. The new base, which is considered the current fair market value, would be reached in even increments over a 10-year period starting in 1969.

New Guide for Open Space Planning

"Where Not to Build," a comprehensive guide to the constructive use of open space in urban and rural planning, has been published by BLM.

The new publication was prepared by the University of Utah under contract to the Bureau. In commenting on the guide director Rasmussen said, "We prepared this publication to provide guidelines for meeting problems the Bureau of Land Management faces in administering public lands near the population centers of the West; but the principles it sets forth for the management of open space within and near urban communities have universal application. We hope it will have wide distribution among city planners, conservationists, and all citizens who are interested in working for a quality environment." The book is available at \$1 a copy from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Regulations Tighten Control of Billboards on Public Domain Lands

Secretary of the Interior Stewart L. Udall has signed new regulations that will control billboards and other advertising displays along road right-of-ways across public lands administered by BLM.

Under the new regulations, no permits will be issued for advertising signs within 660 feet of the roadway

until the Department of Transportation adopts quality standards for advertising along interstate and defense highways. The regulations also set conditions under which the Bureau will issue permits for signs beyond the 660-foot limit.

Johnny Horizon's Campaign Presented at Keep America Beautiful Meeting

Johnny Horizon, the symbolic leader of BLM's national antilitter campaign, took his message, "This Land is Your Land—Keep it Clean," to New York City last November, and was received with applause.

The occasion was the 15th annual meeting of the national antilitter organization, Keep America Beautiful, Inc. At KAB's invitation, John Mattoon, Chief of Information for BLM, explained the campaign and its purposes. He pointed out that the campaign is designed as a cooperative effort in which any community, public or private organization, or individual can participate. He emphasized the extent of the litter problem, and that Johnny Horizon needs all the help he can enlist in cleaning and keeping clean the public lands.

Also at the meeting was David P. Lodzienski of BLM's District Office in Idaho Falls, Idaho. He attended as a member of a delegation from Idaho Falls headed by Mayor S. Eddie Pedersen. Idaho Falls received a KAB City Award—a silver bowl—for its outstanding antilitter program. Lodzienski represents BLM on the Beautify Bonneville Council, Inc., which spearheads litter prevention programs in Idaho Falls and in Bonneville County.

Hemisphere-Jumping Surveyors

Colonel Carlos Lisboa and Major Claudio Souza of the Brazilian Army Map Service recently completed a

visit to Alaska where they worked on survey projects out of BLM's Alaska State Office.

What brought them so far was a chance to learn about and work with the aerial survey method that is widely used in Alaska's rugged countryside to get control for cadastral surveys. Knowledge of aerial survey procedures will be useful when Brazil begins to survey her own jungle frontier areas such as Rhondonia and Matto Grosso.

For their work in Alaska and in Brazil for the next two years Colonel Lisboa and Major Souza have been assigned to the Brazilian Institute for Agrarian Reform. BLM has worked with the Institute, exchanging men and ideas, since 1964.

OCS Lease Sale Sets Records

An oil and gas lease sale in New Orleans last November brought \$149,863,789 in bonus bids for 16 tracts on Louisiana's Outer Continental Shelf.

The highest bid, \$94,190,009 for a tract of 3,437 acres, set a new record high bid for a single tract and also a new per-acre record high of \$27,400. Previous single tract and per-acre records were set in February 1967 when an OCS tract off California brought \$61 million at \$11,374 per acre.

Wild Horse Range in Montana Established

Secretary of the Interior Stewart L. Udall has set aside a 31,000 acre wild horse and wildlife range in the Pryor Mountains along the Montana-Wyoming border. The move was made to give Federal protection to a herd of wild horses whose future has aroused nationwide attention for several months.

Under authorization from the Secretary, BLM Director Boyd L. Rasmussen has appointed a 7-member committee to study the Pryor Mountain herd and its habitat and make recommendations to the Bureau regarding the management of the range and the horses.

Public Land Payments to 25 States Exceed \$27 Million

More than \$27 million have been distributed to 25 States that share in funds from Federal lands managed by BLM. Of the total, more than \$26.4 million came from mineral lease revenues collected for the 6-month period ending June 30, 1968. The rest represents revenues collected from grazing leases and from the sale of public lands.



Mayor S. Eddie Pedersen, Reuben Perin, KAB Board Chairman, David P. Lodzienski.

Slow Burn for Apollo

Grass burning for science

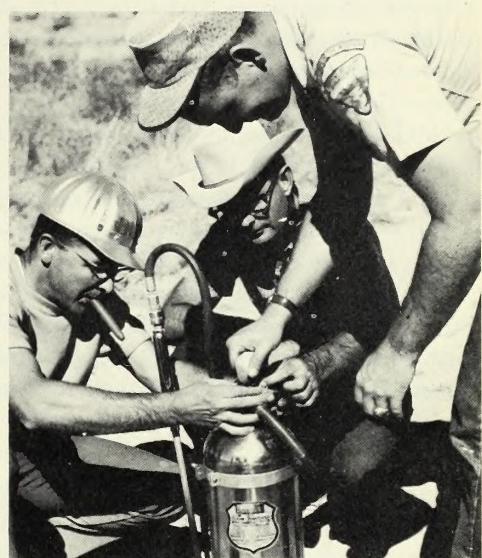
Robert Buffington fires tumbleweeds on McGregor Missile Firing range. Piece of exploded missile lies at his feet.



The square mile "slow burned" for Apollo.



Preparing a torch. Robert Buffington, BLM State Office, Santa Fe; James W. Young, Las Cruces District Manager; John Gumert, Las Cruces Area Manager.



LUNCH TIME for Apollo 7 was only minutes away last October 11 when the telephone rang at the Bureau of Land Management New Mexico State Office in Santa Fe.

The caller was Grover Torbert of BLM's Washington headquarters. He said the U.S. Geological Survey was cooperating with the National Aeronautics and Space Administration in photo experiments on the space mission and that NASA wished to include a test of photographic capabilities in identifying and mapping burned areas on earth. The Geological Survey wanted BLM to burn a square mile of public domain grassland so the astronauts could take some pictures of it from space.

Torbert added that the job should be done as soon as possible because no one could be sure of the exact time the astronauts would be able to make the photographs.

Changing Path

There was another requirement. Because of the changing orbital path of Apollo 7, it would be necessary to burn an area no further north than 32 degrees latitude.

A strip of public land in New Mexico, acquired from Mexico in the Gadsden purchase, met requirements for the experiment. It lies in BLM's Las Cruces District west of the Rio Grande, and is about 21 miles wide at Las Cruces. It runs westward along the border of Mexico for 96 miles, then it widens to 45 miles in the "booteel" of New Mexico next to the Arizona border.

Geological Survey wanted BLM to set fire to 1 square mile of land that had been surveyed under the cadastral survey system. Thus they could fix its position exactly on the face of the earth and on existing maps, and interpret their photos accordingly. A square mile of land contains 640 acres. It is known as a "section" under our cadastral survey system. Each side of a section measures exactly 1 mile.

GS also wanted to obtain photos of the area before it was burned so they would have "before" and "after" shots.

By Doyle Kline

Assistant to the State Director
BLM State Office, Santa Fe, N. Mex.

BLM in New Mexico got busy to see if it could produce the burned section within the degrees of latitude prescribed and before the Apollo capsule came down. First it would be necessary to locate a suitable spot.

Searching for a Site

Las Cruces District Manager James W. Young chartered a light plane and "flew" the area. He knew of several grassy places large enough. He also knew of ranchers he thought might agree to the loss of 640 acres of forage on their BLM allotments.

The flight convinced Young, however, that grass south of 32 degrees latitude was still too green to burn. On the other hand, there was an area of about 8 square miles a short distance north of the 32 degree line that had not had rain in two seasons. Young thought it would burn. But before he burned it, he wanted Geological Survey to approve the location.

The site Young proposed lay on Otero Mesa in the north central portion of the McGregor Missile Firing Range, 46 miles southeast of Alamogordo, N. Mex. The range is a military reservation, and Army permission would be needed to enter it. BLM administers the area for grazing, but no cattle were on the range at the time.

Okay To Go Ahead

Geological Survey, when queried as to the feasibility of the new location, gave the okay to go ahead.

Then the real work began. Young assigned Philip Kirk, the area manager, the job of rounding up a crew to conduct the burning, obtaining Army permission, and running the show.

By now Apollo had been in orbit several hours. Presumably it was taking photos of the southern United States. By sundown Friday, Kirk had rounded up a crew—two soldiers to man a 5,000-gallon Army water tanker (in case the fire didn't behave), 14 men and two pumpers from the Las Cruces District, two men and a pumper from the Socorro District, plus the necessary trucks to get the crews to the location. He also got Army clearance. Included in Kirk's equipment were four flamethrowing torches used to set backfires in "normal" firefighting. They would be used to fire the grass.

A firebreak had to be built outlining the precise boundaries. Kirk contacted a BLM contractor that was installing pipeline a few miles away on the McGregor Range. The contractor shifted a road grader from his job to the "Apollo Burn," as the project was being called by then. Saturday came.

As soon as it was daylight, Kirk, Roy Stovall, another Las Cruces District area manager, and Bob Lawrence and Manual Montes of the Las Cruces District, set out to locate section corners and stake out the lines which were to become firebreaks. Many decisions had to be made in a hurry. Was there enough fuel here to burn? Was there too much? Would the fire jump the fireline and race for miles uncontrolled across the mesa top?

Building a Firebreak

Making the best judgments they could under the circumstances, the men chose section corners and the grader went to work building a firebreak.

In Santa Fe, meanwhile, news wire services were advised orally of the upcoming burn and provided with background. There was neither time nor manpower available on Saturday morning to issue formal press releases. Arrangements were made to provide the press with daily "progress" reports and photos of the burning.

BLM State Director W. J. Anderson, who was in Albuquerque when the "Apollo call" came on Friday, returned to Santa Fe late Friday and said he wanted to be present at the site during the burning. So did his Division Chief for Resource Program Management, Robert O. Buffington. They chartered a plane to be flown by Kirby Kline, of the BLM Albuquerque District, who also is a commercial pilot. Other passengers were Doyle Kline, Assistant to the State Director, who was to take official photographs and handle press contacts; and James F. Kelly, fire control officer in the State Office, and chief of the range management section. Kelly would supervise burning attempts.

An hour before sunset on Saturday the firebreak was

Building a firebreak for the burn.



completed. Temperatures were dropping, the humidity rising. Kelly okayed an experimental burn. One of the torches was lighted and the flame touched the grass. It burned brightly and died. More grass was lighted. Where fuel was heaviest, the flames stayed alive, burning fiercely at times, especially through dried yucca stumps. But only about 100 acres would burn.

Too Cool and Too Damp

Two years before in June, 20,000 acres of this grassland had burned in one afternoon. But now it was clear that without a lot of afternoon heat and wind, burning a square mile of grass at this time of year would be difficult. The desert was just too cool and too damp.

As darkness fell, the crew determined more torches

would be needed to complete the burn on Sunday, along with many gallons of diesel fuel oil. A call went to Roswell for a BLM pumper truck. It was equipped with an "all-day" propane tank and a "long hose" burner. Pumpers at the site were drained of water and filled with diesel fuel. They would be used to spray fuel oil behind the torches as the trucks rolled across the prairie.

At daylight Sunday, the airplane was sent to Socorro to pick up eight torches from the State fire cache. Dick White of the BLM Roswell office started the 200-mile trip to McGregor Range in the pumper truck, and Kirk persuaded an Alamogordo diesel oil distributor to lend BLM a 400-gallon tank. Fuel from the tank, purchased by BLM, would be used to refuel torches and pumpers.

The crew, now 24 strong, gathered at the site and waited for "fire weather" to improve. Kelly took hourly readings of wind, temperature, and relative humidity.

The day was perfect—cloudless, windless, shirt-sleeve comfortable at 73 degrees. An antelope hunt was in progress on McGregor Range, mostly for Army personnel, and far-off rifle shots occasionally broke the silence. Pieces of exploded missiles lay everywhere.

Another Try

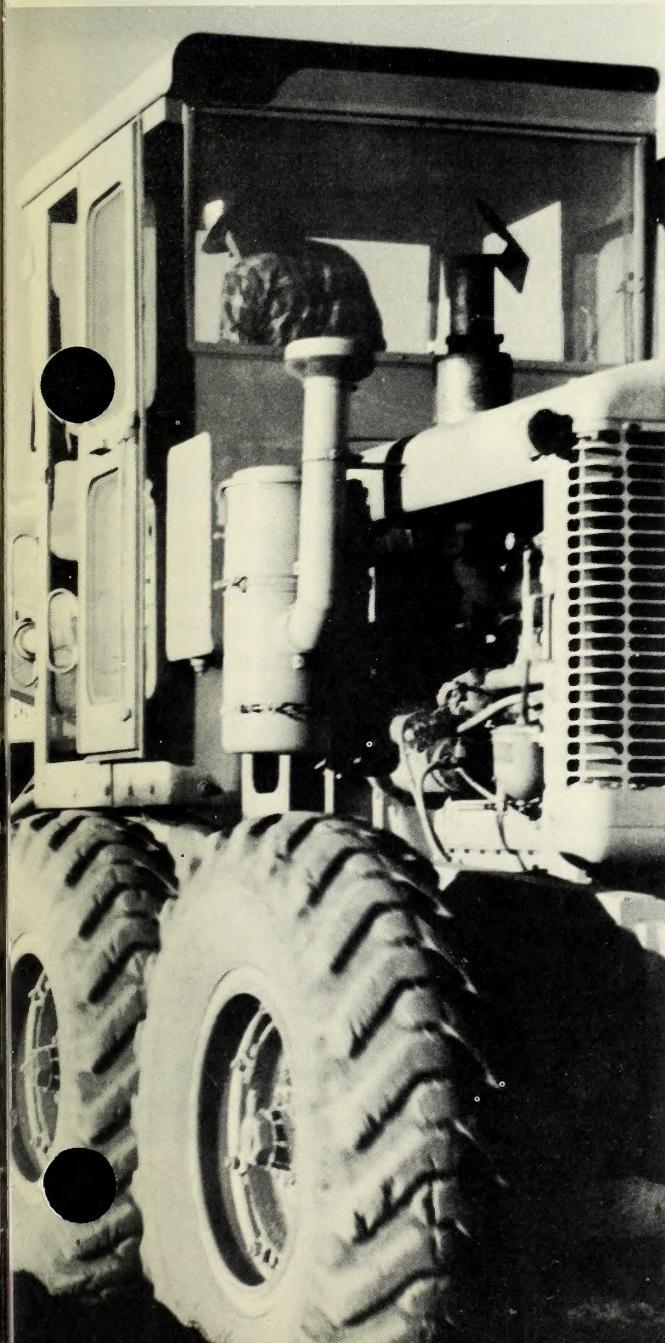
Just before lunch, Wesley Danley of the Las Cruces office showed up with the eight torches, which had been flown into Alamogordo from Socorro, then driven to the site. Dick White rolled up in the orange-painted pumper. Kelly took yet another reading with his fire-weather kit and waved the go-ahead. The wind now blew in fitful gusts of 10–12 m.p.h. The men lit their torches and the burning resumed.

Sunday afternoon saw another 120 acres blackened, mostly on the west two-thirds of the square. By sundown it was obvious still more oil and more burning would be needed. The grass just wouldn't "take off."

On Monday morning, the State Director, Kirk, and Kirby Kline flew the "fire." They said burning the unburned east side corners and blackening the north and east boundaries should make the square a good photo target. Meanwhile Torbert reported to Las Cruces—and Las Cruces told us by radio—that a good black border would serve the purpose, and every acre of the square need not be blackened.

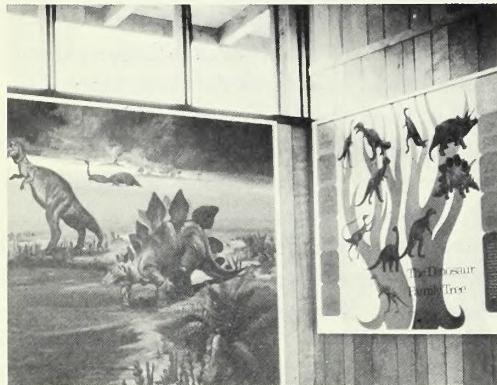
Monday was spent "hand burning" the outline. It was well after dark, however, before the crew called it a day and headed back into Alamogordo. Setting fires had proved discouraging to men trained in putting fires out.

As the crews left, the State Director waved a grimy right arm toward a star-filled sky. "There it is, Apollo," he said. "We did our best." □



Graveyard of Prehistoric Monsters

BLM's first visitor center tells a story of the past



PAGES IN A BOOK of the ages have been opened by the Bureau of Land Management. The locale of the story is the Cleveland-Lloyd Dinosaur Quarry in central Utah. There, with the cooperation of personnel from the nearby Castle Valley Civilian Conservation Center, the Bureau in the fall of 1968 opened its first visitor center.

Actually, the story began some 1,300,000 years ago at a time when a life-and-death struggle was taking place between the dinosaur and his environment. Paleontologists reason that near the end of the dinosaur age, many changes were taking place on the face of the earth. Volcanic action and a changing, drying climate were restricting the monstrous animals of the time to the remaining marshes and other wet areas where food and water were more abundant. Some of these feeding areas proved to be death traps for lunching dinosaurs.

Upon entering a marsh to feed, these hungry plant-eaters—and one 40-ton herbivorous species had to forage almost constantly just to stay alive—sometimes became mired in a bog. The ensuing struggle to free themselves attracted the attention of the equally hungry carnivorous *Allosaurus* and his comrades. Seeing this

apparently easy meal, the predatory beast would leave the safety of dry land and subsequently become mired in a common grave with his prey. This scene took place many, many times in the same area, and the bog eventually became a huge common grave for the beasts of the day. Heaving, bubbling action in the bog afterwards caused a dissociation of the bones so that it finally became a conglomeration of mud and bones that looked as if they were mixed by a mixmaster.

Time Brings Change

Time has brought about many changes to the landscape since this epic struggle for survival. Volcanoes spread a layer of hot ash over the drying bog; rivers brought in sand and mud; and shallow seas covered the area again and again. Time and the elements caused a fossilization of the bones. The erosive forces of wind and water sculptured the earth, cutting deep to expose the bones as we see them now. Eventually, climate and conditions changed to those of today.

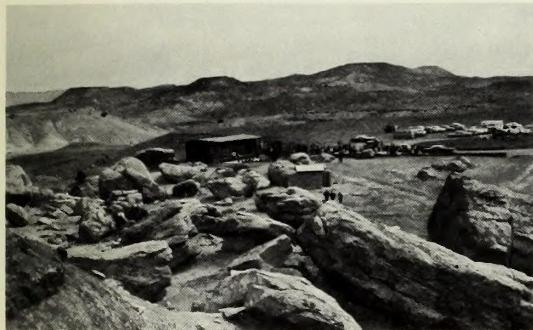
Reports of exposed fossil bones in an area east of Cleveland, Utah, reached the University of Utah from local cowboys and shepherders in 1928. The University became interested and had scientists make a preliminary investigation. Digging began in 1931 and 1932, at which time some 750 bones were recovered.

Between 1939 and 1940, Princeton University made the first major excavations on the site in their quest for a specimen. A major portion of the funds for the

By Barry C. Cushing
Forester-Recreationist
BLM District Office, Price, Utah

expedition were provided by Malcolm Lloyd, Jr., a Princeton law graduate from Philadelphia. The site, therefore, was named the Malcolm Lloyd, Jr. Quarry. Being in the vicinity of Cleveland, Utah, the name of the site later changed and became known as the Cleveland-Lloyd Dinosaur Quarry.

Cleveland-Lloyd Dinosaur Quarry and Visitor Center.



"Malcolm"

Princeton recovered the first complete dinosaur skeleton from the quarry in their 1939-40 dig. It was a carnivorous *Allosaurus*. World War II interrupted the assembly of this specimen, nicknamed "Malcolm," and it gathered dust in a basement at Princeton for 15 years. When finally assembled, "Malcolm" was magnificent, measuring some 28-feet long and standing 12-feet high. Though fierce enough to kill larger species up to 40 tons in size, the *Allosaurus* weighed only slightly more than a horse.

The quarry site was inactive from 1941 to 1960, when the University of Utah again became interested and started a 5-year dig with five cooperating institutions. Dr. William Lee Stokes of the University of Utah, a native of Cleveland, was placed in charge of this ambitious project. More than 20 additional institutions have since cooperated and received specimens from the site.

To date, more than 10,000 bones, representing approximately 100 different animals, have been taken from the quarry. From these bones, more than 30 skeletons have been assembled and are on display throughout the world—from Italy and Japan to Lubbock, Tex., the Cleveland-Lloyd reminders of an age long past may be viewed.

Meanwhile, Bureau of Land Management personnel were interested in the quarry site because it is on public land. Lorin J. Welker, BLM District Manager at Price,

saw the need for interpretive facilities so scientist and layman alike could marvel at the epic story of the dinosaur from its existence a million years ago to the reconstruction of typical skeletons in natural history museums today. Ground was broken and, on September 21, 1968, the visitor center was dedicated.

Visitor center dedication. Lorin J. Welker, BLM District Manager at Price, Utah, addresses audience.



Job Corps

The project—including visitor center, picnic tables, water storage tanks, and toilet facilities—was developed by young corpsmen of the Castle Valley Civilian Conservation Center, a Job Corps facility under BLM's administration. Plans and supervision were provided by BLM personnel.

Interpretive exhibits housed in the visitor center include paintings, photographs, and interpretation of the Cleveland-Lloyd Dinosaur Quarry story. Also included is a 15-foot *Allosaurus*, assembled from fossil bones found at the site. A highlight of the displays is a particularly attractive and interesting mural, 12-feet long and 6-feet high, depicting the dinosaurs and their environment 1,300,000 years ago.

Further development at the site—which has been designated a registered National Landmark—will include a building over an excavation where visitors will be able to see exposed dinosaur bones in place in the soil.

In a dedicatory address at the official opening of the visitor center, U.S. Senator Frank E. Moss of Utah said, "The dedication of this handsome visitor center has a three-fold significance: It enhances and makes more meaningful one of Utah's most unique tourist attractions, it officially opens the first visitor center in the Nation to be built at a Bureau of Land Management site to interpret the surrounding public domain lands for tourists, and it is another tangible result of the work of the Job Corps." □



Cloud-High Campground

**Fresh air
and spectacular scenery**

IF HIGH COUNTRY CAMPING is your thing, the Bureau of Land Management has just the spot for you—the Mill Creek Campground in southwestern Colorado.

On the upper flanks of the San Juan Mountains at the 9,470-foot level, Mill Creek may be the highest BLM campground in the country. Highest or not, there's no doubt that it lies in the midst of some of the most spectacular scenery to be found anywhere.

Colorado has 52 of the highest mountains in the Nation, and it has 1,500 peaks higher than 10,000 feet. Within 6 miles of Mill Creek and on public land there are three mountains that stand above 14,000 feet: Handies, Red Cloud, and Sunshine. And all around are hundreds of peaks soaring to 12,000 and 13,000 feet and bearing snowfields yearlong.

Geologically speaking, the San Juans are very young mountains. The glaciers that almost entirely covered them within the last million years sculptured them into some of the continent's roughest.

Mill Creek Campground, 14 miles southwest of Lake City in Hinsdale County, consists of a single loop of campsites. It was opened last summer and officially dedicated by the Governor of Colorado, John Love. Two more loops and 44 more campsites will eventually be added to the cloud-high campground.

The country surrounding Mill Creek offers an exceptional variety of outdoor recreation opportunities. Obviously there's hiking. Each year some 90 persons climb Red Cloud, and about 75 make it to the top of Sunshine, taking it slow in the thin air that makes even the most experienced hiker gasp for breath.

Below 12,000 feet the San Juans are covered with spruce, fir, and aspen which offer shelter to herds of elk, mule deer, coyotes, blue grouse, ptarmigan, some mountain sheep, and an occasional bear.

The Lake Fork of the Gunnison River, which flows by the campground, sparkles with clear, cold water and provides quality trout fishing. There are, in addition, countless beaver ponds along the small mountain streams and numerous small lakes throughout the mountains.

Lake San Cristobal, the largest natural lake in Colorado and one of the world's most beautiful, is only 15 minutes down the road. It, too, provides good fishing.



Colorado Governor John Love and Mrs. Love cut the ribbon at opening day ceremonies for Mill Creek Campground.



The author's daughters, Dawn and Holly, explore the remains of an old mill in the ghost town of Sherman. The mineral roasting oven was built of bricks made in St. Louis, Mo., about 1880.



Carson, on the Continental Divide.

The lake was formed some 700 years ago when a huge mud flow slid down a mountain and across the valley to form a natural dam. Now called Slumgullion Slide, the mud flow on the upper half of the 5-mile-long slide is still active. In some years it may move as much as 20 feet in places. One proof of this is that trees growing on the slide lean in all directions.

Back in the 1870's valuable strikes of gold and silver were made in the mountains. Mines and mills were built and worked steadily into the early 1900's. Remains of these workings exist today. Some exploration work continues but production is small. Along with the abandoned mills are numerous ghost towns such as Sherman, White Cross, Carson, Capital City, Burrow's Park, Animas Forks, Eureka, Roses Cabin, and Mineral Point. The old townsite of Sherman is only two road miles west of Mill Creek, and Carson is five jeep miles to the southeast. Carson has the distinction of being right at the Continental Divide. Capital City was once proposed as the capital for Colorado, but it lost to Denver by a narrow vote.

Bottle hunters, antique collectors, rockhounds, and amateur geologists delight in searching these old towns, digging in the dumps, chipping rock samples, going through the mill tailings. For those who are willing to hike, there are old cabins spread throughout the mountains that may not have been visited for years.

Whatever your choice in high country recreation—jeeping, photography, hiking, climbing, hunting, fishing, just plain looking—Mill Creek Campground makes an excellent base of operations. The summers are cool, never hot, and in the fall the aspen groves turn the countryside to gold. As you move about, the landscape before you is one of ever-changing beauty and spectacle. And for your comfort, there are no rattlesnakes in this part of Colorado, no poison ivy or oak, and only a few mosquitoes.

If the high country of the San Juans is not an earthly paradise, it's close enough. □

By Donald W. Wirth

Realty Specialist
BLM District Office, Montrose, Colo.

Litter Hunters Go Full Speed Ahead

4-wheelers show they
care about outdoor beauty

Brenda Lynn Myers, daughter of
4-Wheelers' vice president
Dick Myers, was named "Miss BLM"
for the cleanup event.





MORE THAN 750 members of thirty 4-Wheel Drive Clubs from California and Arizona turned into sportsmen of another sort on an October weekend in 1968 as they charged over the scenic Imperial Sand Hills that cover some 200 square miles in Southern California. This time the 4-wheelers turned into hunters, and their quarry was the trash and litter that had been strewn across the landscape by careless and thoughtless visitors.

The "big game" they brought back to a central collection camp was big indeed: some 35 truckloads of litter from the 40-mile length of the hills. Their successful effort was aptly called "Operation Clean Sweep."

The cleanup drive was spearheaded by Dick Myers, vice president of the Southern Region of the California Association of 4-Wheel Drive Clubs, Inc., and his club from the San Diego area, the Vagabonds. The Imperial Sand Hills are a favorite spot for 4-wheelers' outings and for dune buggy adventuring. Enthusiasts of all ages—from teenagers to grandmothers—turned out for the cleanup to show their concern for keeping the sand hills beautiful for all users.

What to do with all the trash was also a problem of some size. Two giant piles of it were collected near Glamis and at Buttercup Valley, near Route 80. County highway maintenance personnel hauled it from these points to a dump.

Bagging their game with Johnny Horizon litterbags donated by the Riverside District Office, which also provided a truck, the 4-Wheelers discovered all kinds of trash. There was the usual assortment of cans, bottles, cartons, barrels, boxes, and other waste, and there was junk of a bigger sort, too: old car bodies, oil drums, and other heavy pieces of junk. The hunt even turned up a land mine and 100 rounds of .30 caliber ammunition, probably left behind when General George S. Patton used the desert for training in World War II.

The Imperial Sand Hills cleanup was a real bargain for taxpayers. If BLM had contracted the job with a commercial firm, it would have cost about \$29,000. But because of the interest and civic spirit of the 4-wheel drive clubs, the total cost to BLM was \$300—the price of the Johnny Horizon litterbags.

This massive cleanup effort and the "big game" it brought in emphasizes the extent of the problem of litter and junk on the public lands throughout the West. It's estimated that there are more than 2,000 unauthorized dump sites on the public lands, and cleaning them up would cost more than \$10 million. □

By Blair Riepma Gaines

Writer-Editor, BLM
Washington, D.C.

"Plus Trees" for the Future

*A helping hand
for the Nation's forests*



An orchard tree at the beginning of the second growing season after grafting. The pencil points to the union between the orchard root stock and a scion from parent tree No. 204.

Photo by Lone Reed, Eugene Register-Guard

NESTLED IN THE FOOTHILLS of the Cascade Range northeast of Salem, Oreg., is the Walter H. Horning Tree Seed Orchard. It is one of the most challenging conservation projects ever undertaken by the Bureau of Land Management. Its goal: tree improvement through genetics.

The project was formally dedicated September 18, 1968, to the memory of Walter H. Horning. Mr. Horning was the first Chief Forester of the O&C Lands Administration, which in 1946 became part of the Bureau of Land Management. Horning for many years served as BLM Chief of Forestry in Washington, D.C. At the time of his death in August 1961, he was working on a historical study relating to administration of the O&C lands.

In managing Oregon timberlands under its jurisdiction for sustained forest production, the Bureau of Land Management finds it necessary to reforest by planting or direct seeding some 30,000 acres annually.

By Walter H. Gavin
Area Manager, Cascade Resource Area

and William H. Taylor
Forest Geneticist

This acreage accumulates from annual cuttings, sale areas in need of reforestation, areas only partially reforested that require additional treatment, timber trespass, and fires or other natural losses. Large quantities of high quality tree seed are needed to meet the needs of the reforestation program.

Applied research and experience have demonstrated that in the Douglas-fir region it is generally best to reforest with seed grown in an area having environmental and climatic conditions similar to the area to be planted. Because of this, Oregon has been divided into seed zones by the Western Forest Tree Seed Council. The Bureau of Land Management is represented on this Council. These zones are categorized by areas of similar climatic conditions, watershed influences, and timber types.

Even though seed collection zones are generally large, the Bureau, the Forest Service, and others have experienced considerable difficulty in seed acquisition. Cone crops do not always occur abundantly in zones where seed is in demand, with the result that cone pickers often transport cones from zones with abundant crops to meet the demand or to command a higher price in zones with light crops. Additionally, seed is often collected from genetically inferior trees. The need for

control in identifying the origin of seed became apparent as some planted trees proved to be genetically inferior.

The loss of productive forest land for uses such as powerline rights-of-way, road construction, reservoir and flood control projects, special purpose withdrawals, and recreation developments, have affected both public and private forest management. If the wood fiber needs of our growing Nation are to be met, increasing amounts of wood fiber must come from a steadily shrinking land base. This means that ways must be found to increase production from the remaining forest lands through intensive management.

Principally for the above reasons, both public agencies and private companies have charted a tree improvement course in the form of tree seed orchards. Purposes of a tree seed orchard are: (1) to produce seed from parent trees that are genetically superior in order to obtain faster growth and improved timber quality; and (2) to control seed sources, with a wide selection of superior parents, that will produce environmentally adapted seed well-suited for the management areas represented in the orchard.

The idea of a Douglas-fir tree seed orchard was conceived in 1963 by BLM's Oregon State Office and Salem District personnel. In the fall of 1963, the State Director requested the Salem District to proceed with development of such an orchard at Colton. The implementation of the State-wide project was the responsibility of the Cascade Resource Area. A site was chosen, access to the project area was obtained, and a property boundary survey made.

Early in 1964, funds resulting indirectly from the Accelerated Public Works Program were used to clear 60 acres of stumps and debris to facilitate development and maintenance of the orchard.

With the land cleared, corpsmen from the Tillamook Job Corps Civilian Conservation Center participated in the orchard development work, and found it a most satisfying and benefiting experience. As well as helping in the physical development of the orchard, many corpsmen for the first time learned to work with their hands and with tools. At the Tillamook Center itself, competition was keen among corpsmen for the opportunity to work in the orchard.

The Horning orchard is presently designed to produce Douglas-fir seed for "moist" sites in western Oregon which occupy about one million acres of BLM-administered lands in the Salem, Eugene, Roseburg, and Coos Bay Districts. Another orchard, the Merlin Tree Seed Orchard, is being developed in the Medford District to serve "dry" sites in southern Oregon.

The selection of superior parent trees, commonly called plus trees, is critical to insure superior progeny. The selection method designed by BLM and used in Oregon has received international attention. Plus trees are trees which are better than their neighbors in a number of heritable traits such as volume growth, stem form, branching, cone production, and resistance to insects, diseases, rot, and other types of defect. Since demands for wood are increasing, BLM gives special emphasis to volume growth as the key heritable trait. However, other traits are important, and all are considered in the selection process.

This selection process begins as experienced foresters report the most vigorous, even-aged natural stands that can be found within the seed zones and sites under consideration. From these stands they tentatively select candidate trees. A candidate tree's height and diameter are measured, and its age determined with an increment borer which removes a core of wood in which annual rings can be counted. The length of crown is measured, since a good timber tree should be self-pruning, dropping its limbs cleanly and to a good height.

The width of the tree's crown is also important: several slender-crowned trees can be grown on the same area that one tree with long limbs and large crown volume would require. Limb size and angle are im-

High climber after scions (clippings) from the top branches of candidate parent tree No. 204. This tree is 72 years old and 187 feet tall. Photo by Lone Reed, Eugene Register-Guard



portant, for both bear on the tree's ability to shed snow. The tree should not have defects such as a crooked trunk or double top. And lastly, it must be a cone bearer.

A map of the candidate's location and a chart listing its characteristics are made. Since good trees often grow in groups, each candidate is graded against ten neighboring trees. Candidate trees are also charted with respect to cubic foot tree volume over age. On the basis of this information, together with the recorded heritable traits, the plus trees finally are designated.

The plus trees are then climbed—some are 200 feet tall—or their tops are shot out with a rifle to obtain the terminal leader and the top two or three branch whorls. From this material scions (cuttings) are carefully taken and dipped in melted wax to prevent their drying out while being transported in cold storage to the orchard.

Cuttings and their descendants from the same parent trees are known as a clone. Near the Horning Orchard are selected native trees to which plus tree scions are grafted. These are known as clone banks. Such graftings permit the scions to continue growing so they can provide additional graftings for the seed orchard when rootstocks planted there are large enough to receive them.

The use of clone banks also provides a means of determining which trees are compatible with scions grafted to them. As with the human system which often rejects transplants of vital organs, trees frequently reject scions. Incompatible scions often die in the first or second year after grafting; but many live on for a number of years, forming a poorly joined union that causes poor vigor in the tree or subjects it to disease, rot, breakage, and death with subsequent loss of seed production. If, in the clone bank area, a high percentage of scions from one candidate parent tree shows incompatibility, the tree is either eliminated from orchard use, or a search is begun for a compatible root stock. If scions from a candidate tree graft readily, the tree is considered a firm parent tree for the orchard. Scions then are taken from clones of acceptable parent trees and are grafted on root stock growing in the orchard.

Two grafts are made on each root stock—the terminal leader and a side branch. In the second growing season, grafted scions' compatibility with root stock is checked. To do this, the side branch graft is removed. Sections are cut from the graft and placed under microscope for determination of compatibility. A compatible graft will show perfect union of cellular tissue, while an incompatible graft will reveal disruption of cellular tissue. Incompatible scions or root stocks in the orchard

are replaced with others that are compatible.

Clones are arranged in the orchard by groups and seed zones, and meticulous records are kept for each clone. Grafted trees usually take at least 2 years. Co-
will be collected by seed zone, and seed harvested will be used to grow planting stock for use in the zone represented. Seed will also be planted in a progeny study area where, over a period of time, progeny will be analyzed for genetic characteristics.

Seed trees must be clipped to keep the grafts dominant. A spray program for aphids, which get under the grafting wax, and for insects and borers is carried out. Small trees are mulched with paper, but some hand hoeing and tractor cultivating is necessary.

The orchard will also provide an opportunity to intensify breeding for genetic improvement by controlled cross pollination of the finest trees in each clone.

It is anticipated that the selection and screening process will continue indefinitely. As better parent trees are found or developed, their clones will be established in the orchard, and less desirable clones phased out.

The benefits of the program are yet to be measured; however, it is expected to have a favorable economic impact. When production results become measurable, they will be reflected in increased harvests of timber from administered lands.

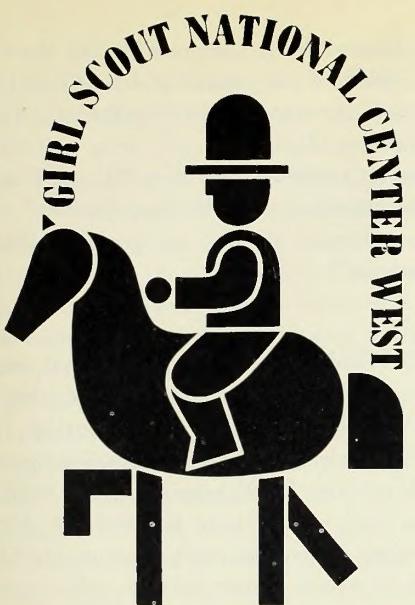
The Bureau of Land Management has been active in tree improvement work for more than a decade. In 1957 BLM and the Forest Service cooperatively developed the Dorena Tree Seed Orchard near Cottage Grove in west central Oregon. At Dorena, seedlings are grown from the seed of sugar pine trees previously chosen because they were thought to be resistant to white pine blister rust. Seedlings showing the greatest resistance when tested in inoculation chambers are grafted to rootstocks in the Merlin Tree Seed Orchard. Seed from superior trees produced at Merlin will be used to reforest sites adapted to sugar pine production.

In addition to its function in testing the disease resistance of sugar pine seedlings, the Dorena Orchard also will produce superior strains of western white pine, ponderosa pine, and Douglas-fir seed.

Although the Horning Tree Seed Orchard principally will produce superior strains of Douglas-fir seed, seed of another valuable timber tree, noble fir, also will be grown there.

At all three of BLM's tree seed orchards, the objective is to produce seed for growing trees of superior quality which will best use the productive capacity of the timberlands of western Oregon.

To this end, we are sure Mr. Horning would fully subscribe. □



For enjoyment and learning in the outdoors

NEAR THE TINY TOWN of Ten Sleep, Wyo., scene of the last of this Nation's great cattle wars, Girl Scouts of the U.S.A. has acquired some 15,000 acres in the Bighorn Mountains for the establishment of a national center.

The site will be called Girl Scout National Center West. Scouts from all over the country as well as Girl Guides from all over the world will gather there for large encampments, troop camping, training workshops, seminars and conferences for both girls and adults, and activities in arts, crafts, and sports of all kinds.

The Bureau of Land Management played a key role in making the site available for the Center. Permanent facilities of the Center will be built on a 640-acre tract to be acquired from BLM under the Recreation and Public Purposes Act. In addition, BLM issued the youth organization a special use permit covering nearly 6,000 acres. To round out their ownership to 15,000 acres, the Girl Scouts purchased a large ranch and a number of smaller holdings. Cost of developing the Center is conservatively estimated at \$3 million.

Acquisition of the site was announced at a dinner given by Wyoming Governor Stanley K. Hathaway and the Worland, Wyo., Chamber of Commerce in honor of the Girl Scouts. The event was attended by a delegation of Girl Scout officials headed by Mrs. Holton R. Price, Jr., National President; by political and civic dignitaries of Wyoming; and by BLM Director Boyd L. Rasmussen. Actress Debbie Reynolds, closely associated with scouting since her youth, was mistress of ceremonies.

Interior Secretary Stewart L. Udall wired that he was pleased that the Department, through BLM, was able to make public lands available for the Center. He added, "I know that the Girl Scouts who visit the Center in the years to come will enjoy their 'home' in this spacious countryside, and I wish you every success with this exciting new venture."

Girl Scout National Center West will be inaugurated in the summer of 1969 when 50 troops of Senior Scouts, one from each of the States, meet at Ten Sleep for 14 days of backpacking and trailblazing.

The new property offers countless program possibilities for Girl Scouts. There the girls can enjoy the beauty of nature and the outdoors, learn to conserve natural resources, and study the history and culture of the West. The rich archeological content of the area affords opportunity for digs under the supervision of professional archeologists. Many artifacts have been found on the surface of the land, and there are pictographs—ancient Indian rock paintings—in caves on the property. Geologically, the site is considered a treasure. It contains all but one of the major geological strata. The area abounds with elk, deer, and small game, and the climate allows both winter and summer sports. A further advantage of the site is its location adjacent to the Bighorn National Forest administered by the U.S. Department of Agriculture's Forest Service.

Many wonderful experiences are in store for Girl Scouts who go to the center, and the richest of all could be a deeper awareness of self. In 1968 the Girl Scouts held a trial run on the site during which troops backpacked and blazed trails. The poetic reaction of a Senior Scout may best sum up what the Center can mean to young adults:

"When I measure myself with the grasses,
I find I am very tall;
But when I measure myself with the mountains,
I do not exist at all."

Boyd L. Rasmussen, Miss Debbie Reynolds, Mrs. Holton R. Price, Jr., and Frank Meyers, President, Worland Chamber of Commerce.
Photo by Adelaide Brady



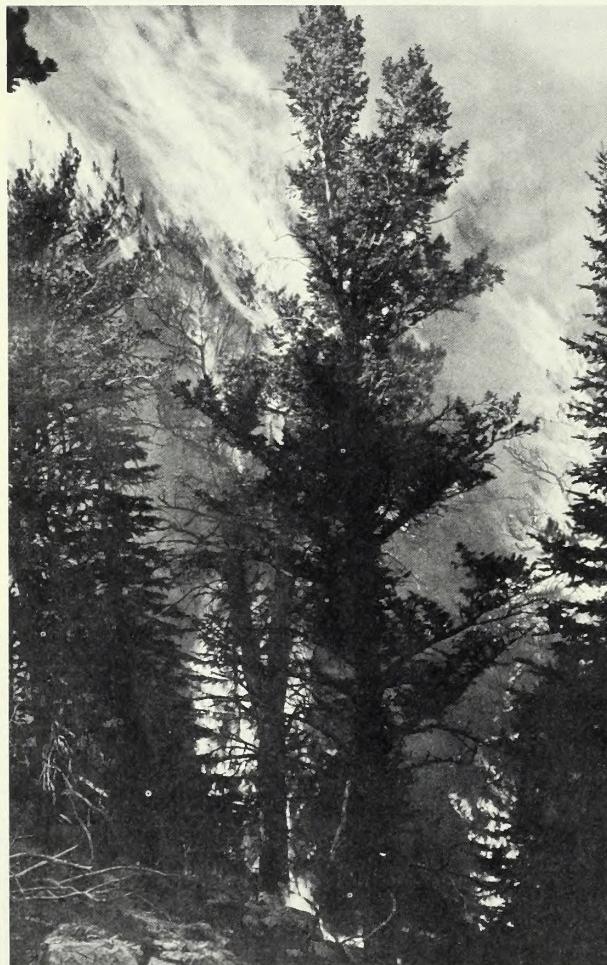
"Fires burned from Jordan Valley to the Canadian border in Idaho Friday night and nearly 40,000 acres were ablaze throughout the Northwest's tinder-dry forests and range lands."

"Lightning triggered new fires Thursday in timberlands from Alaska to the Mexican border."

"All commercial aircraft are grounded because of palls of smoke."

Wildfire— Everybody's Business

Cooperation against the common enemy



NEWS ITEMS similar to these are not uncommon throughout the West and Alaska during the fire season. Most of these fires occur during July and August, and Federal firefighting agencies annually face thousands of fires. In all, possibly half a million acres of timber and range lands are charred despite the large numbers of men and equipment used to fight these fires. All of which makes wildfire—the common enemy—everybody's business.

Many combinations of conditions can increase the numbers of wildfires and hamper firefighters. A common one is excessive moisture during the early spring months which causes a heavier than normal growth

By **Don R. Christman**
Forester, BLM
Washington, D.C.

and **James A. Moorhouse**
Natural Resources Specialist
BLM State Office, Portland, Oreg.



of flammable vegetation, particularly annual plants. This extra fuel, combined with hot, dry weather and frequent dry-lightning storms, creates an ideal situation for fires to start. Once ignited, they burn hotter and spread faster than usual. Just recently one lightning storm started almost 50 fires in the mountains of Idaho and Montana.

What about a fire in the backcountry, a hundred miles from a base of operations? Who takes care of this kind of monster—wildfire that may cover 50,000 acres and have a perimeter of 40 or 50 miles?

Until 1964 most State and Federal agencies cooperated informally in fighting the common enemy. When a fire started, the agency first spotting the fire usually took initial action to put the fire out. When an agency needed additional help, others were asked for assistance. But sometimes it took a great deal of time to round up enough men and equipment because there was no standard procedure for requesting help. Trained people and good equipment were available from various agencies and several States, but there was no control center for coordinating them.

There were real difficulties in setting up the support and logistics necessary for a large work force, especially in the backcountry. Once enough men and equipment reached the fire, the biggest problem was providing tools and food and transportation and the one hundred other things a fire organization in the backcountry needs.

Realizing the need for an organized fire support group, the Bureau of Land Management and the U.S.

Forest Service developed the idea of a centralized fire center to be located at Boise, Idaho. The two agencies decided that a combined center serving all Federal firefighting people would be more economical, would provide closer coordination, and most important, would get the job done as quickly and efficiently as possible. They called this new base of operations the Boise Interagency Fire Center, or BIFC. The center was an immediate success.

In commenting on BIFC's work during the 1968 fire season, Interior Secretary Stewart L. Udall said: "This year's fire crisis has dramatically pointed up the advantages of interagency cooperation in controlling the forest and range fires. The Boise Interagency Fire Center coordinated the efforts of personnel from the Bureau of Land Management, the Forest Service, National Park Service, Bureau of Indian Affairs, and Bureau of Sport Fisheries and Wildlife. This pooling of manpower has enabled us to better meet the needs of critical areas."

Since the Forest Service and BLM have the largest land areas to protect, the bulk of the administration and operation of BIFC falls upon these two agencies. However, any Federal agency needing fire control assistance has access to the center.

Because fire weather information, particularly forecasts, is so important in fire suppression work, the U.S. Weather Bureau has an office at BIFC. It works closely with people at the center and provides spot forecasts.

The primary mission of the fire center is to support





actual firefighting efforts. A large fire may require several hundred or even several thousand men, and may make it necessary to draw people and equipment from a number of states. By maintaining an inventory of men and equipment available from all agencies the BIFC is able to provide help with minimum delay.

Because of BIFC's capabilities, it is no longer necessary for Forest Service or BLM District Offices to maintain huge supplies of equipment to fight unusually large fires. They now need to keep only enough tools to handle the normal fire load in their areas. If a big fire occurs, they can call on BIFC for help and receive support in a few hours.

BIFC Director, Roger R. Robinson, a veteran firefighter for BLM, explains there are several secondary responsibilities of BIFC, and more benefits are becoming apparent all the time. Training in fire suppression and the techniques of analyzing fire weather can now be centralized for all agencies. New equipment is being tested and modified at the center.

Standard fire suppression handbooks and guidelines familiarize all firefighting people with uniform techniques and procedures. This means that a man will be immediately effective on fires because he knows such details as radio call signs, features of certain tanker trucks, or the proper mixture of a particular chemical retardant. A man needn't waste time learning on the job.

The BIFC makes it possible to carry out fire suppression work in a businesslike manner . . .

. . . a harassed fire boss calls BIFC late at night with a special request. The dispatcher (often a woman) answers, "This is Boise Fire Center Dispatch. As of

2117 hours (9:17 pm) you are on tape. Proceed with your order."

The tired man says, "I've got a fire out of control. About 6,000 acres in the mountains. I need 200 men, 3 helicopters, and handtools for 100 men by daylight tomorrow. I'll also need breakfast and lunch for 450 men. Can you help me out?"

"Just a moment, please . . . I can get you 150 Indians from New Mexico, and the Sho-Ban Indians are not available from Fort Hall, Idaho. Two helicopters are based at Missoula, Mont., and one at Elko, Nev. The handtools can be sent from our warehouse here. Let me check on the people and aircraft and I'll call you back. Where would you like the order sent?"

In a short time, after checking the handwritten order against the tape recording, and making the necessary contacts for men and equipment, the dispatcher confirms the order with the fire boss. He is given the estimated time of arrival of the men, the flight number of the airliner bringing them, the FAA registration numbers and color of the helicopters and the names of the pilots flying them. He is also told how and when he can expect shipment of the handtools and food.

Knowing that help is on the way, the fire boss can go ahead with his plans to bring the fire under control. And more than likely he directs the fire's suppression with the help of men from agencies other than his own.

The Boise Interagency Fire Center is a giant step toward coordinating the resources of agencies fighting wildfire in the 11 Western States and Alaska. Through it fires can be attacked faster and more efficiently, and controlled sooner with less loss of natural resources. □



The following news notes, compiled by the Public Land Law Review Commission, report the progress to date of the Commission's work.

New Study Contracts

Studies placed under contract recently by the Commission include:

Outdoor Recreation.—a study dealing specifically with policy controlling use and development of existing Federal public lands for outdoor recreation. Contract awarded to Herman D. Ruth and Associates of Berkeley, Calif. It will be completed by June 15, 1969 at a price not to exceed \$132,000. Robert J. Lavell is staff project officer.

Special emphasis will be placed on such matters as standards controlling the use of public lands for outdoor recreation; disposal of Federal lands; Federal acquisition of lands; pricing provisions for recreation use; development of recreation facilities; relationship of Federal recreation development and use policies to recreation planning at Federal and State levels; the Wilderness Act of 1964 and its administration; and public access for recreation purposes.

Energy Fuel Mineral Resources.—a survey of all aspects of fuel mineral resources and their uses, including their role in the national economy. Contract awarded to Abt Associates, Inc. of Cambridge, Mass., and Los Angeles, Calif. The contract provides for the study to be completed by April 30, 1969 at a price not to exceed \$139,398. Frank H. Skelding is staff project officer.

The study will include broad analyses of the role of fuel minerals in the national and state economies; the technical, economic and organizational characteristics of the fuel mineral industries; the national energy econ-

omy; fuel mineral and energy reserves and resources; user and environmental relations; domestic leasing systems; and effects of present policies.

History of Public Land Law Development Published

An 828-page history of public land law development in the United States has been published by the Commission. Representative Wayne N. Aspinall, Chairman of the Commission, said the book is "the foundation stone of our entire review process." It was written by Dr. Paul Wallace Gates of Cornell University, with the exception of one chapter on mineral resources development which was prepared by Professor Robert W. Swenson of the University of Utah.

The book contains 23 chapters, with a summary, bibliography, and appendix. Hard cover copies may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The price is \$8.25 a copy.

This is the second volume to be published by the Commission. The first was a "Digest of Public Land Laws," compiled by Shepard's Citations of Colorado Springs, Colo., under contract with the Commission.

Senator Fannin Appointed to Commission

Senator Paul J. Fannin has been appointed to the Commission to replace Senator Thomas H. Kuchel who has resigned. The appointment was made by the vice president in accordance with provisions of Public Law 88-606 which created the Commission.

PUBLIC SALE BULLETIN BOARD

This is a compilation of the most up-to-date information possible on up-coming sales of public lands by land offices of the Bureau of Land Management. For details of land descriptions, prices, and other information pertinent to sales, you must write the individual land office concerned. In most cases, there are adjoining landowners who have statutory preference rights and may wish to exercise them to buy the land. Sales notices will point out, insofar as possible, problems relating to (1) access, (2) adjoining owner preference rights, (3) small-tract sales limitation of one per customer, and other pertinent information. When possible, all sales are scheduled far enough in advance so ample notice can be given in Our Public Lands. Sales listed can be canceled on short notice for administrative and technical reasons. A listing of BLM land offices with addresses is found on the opposite page.

Key: A, acres; app, appraised; El, elevation; est val, estimated value; Cty, county; veg, vegetative; pot, potential; pub, publication cost; elec, electricity; tel, telephone; D.O., District Office; L.O., Land Office.

ARIZONA

1,089 A, 18 miles southwest of Tucson. El 2,500 ft. Zoned rural residential. Flat desert terrain, soil sandy loam. Probably sold as 27 separate parcels of 40 A each. Access fair; no improvements. Utilities; water pipeline crosses tract. App \$285 per A. 33.80 A, 10 miles southeast of Tucson. El 2,700 ft. Good access; desert terrain, soil gravelly, sandy loam. Suburban subdivision or trailer site development pot. App \$12,200. 320 A, 28 miles east of Douglas, just north of U.S.-Mexico boundary, Cochise Cty. El averages 4,500 ft. Moderately rolling to rough and rocky. No improvements. Veg: Sonoran Desert. Poor access. Grazing pot. App \$9,840.

72.04 A, ½ mile west of Mayor, Yavapai Cty. Access by ungraded abandoned roadbed of Santa Fe Railroad. Flat. El 4,500 ft. Veg: manzanita, catclaw, prickly pear. App. \$16,200 plus pub \$66.50. 160 A, 12 miles west of Tombstone, Cochise Cty. El 4,100 ft. Access via ranch road on private land from State Hwy. 82 to within ½ mile of tract, then via 4-wheel drive. No utilities; nearest powerline 1½ miles south along Hwy. 82. App \$7,200 plus pub \$30.61.

2 tracts, 26.05 A, 11.58 A, 18 miles southwest of Tombstone, Cochise Cty. El 4,600 ft. Joined on west by Fort Huachuca Military Reservation. Sold separately; not joined. No access, utilities. Flat to gently rolling, App \$7,550 plus pub \$25.20 and \$3,350 plus pub \$25.20.

CALIFORNIA

40.73 A, 4 miles northeast of Alturas, Modoc Cty. Flat to moderate topography, sandy loam soil. Surrounded by privately-owned lands. No legal access, no permanent water. App. \$2,850; sale Feb. 20, 1969.

2 tracts, 8.58 A, in San Diego Cty, 171.29 A in San Bernadino Cty, east of Barstow. App \$14,400 and \$27,400.

89 small tracts in 8 areas of San Bernardino Cty, offered every Wednesday at Riverside.

MONTANA

8 tracts, 45 to 640 A, 28 air miles south of Jordan, Garfield Cty. Rolling to sharply rolling hills, some breaks. Grazing pot. Access across private lands by private truck trail; some have range improvements, owner to be reimbursed by purchaser. App \$7.50-\$10 per A. Sale after Feb. 1, 1969.

120 A, 4 miles northeast of Hammond. Rough, grazing pot. Rolling to steep; fenced on south and across southwest corner. 2 reservoirs, owner to be reimbursed by purchaser. App \$1,600. Sale after Feb. 1, 1969.

48.33 A, 45 air miles south of Miles City, Powder River Cty. Moderately rolling to steep and rough; soils not suitable for cultivation. Excellent stand of native grasses; no stockwater; access over private land. App \$630. Sale after Feb. 1, 1969.

2 tracts, 40 A, each, 55 air miles east, southwest of Miles City, Custer Cty. Rolling, grazing pot; access via ranch trails across nearby private lands. No improvements; fenced on west side; one fenced on south. App \$760 each. Sale after Feb. 1, 1969.

160 A, 20 miles southeast of Roy, Fergus Cty. Moderately level to rolling range land. No stockwater; shallow clay soil limits cultivation pot. No improvements. App \$1,900. Sale after Feb. 1, 1969.

5 tracts; 2 of 40 A each, 3 of 80 A each, 3-4 miles southwest of Melville, Sweet Grass Cty. Grazing pot; rolling to gently rolling foothills. Cty road through one past 2 tracts. Others reached by range trails; improvements, fences and ditch across 2 tracts. Owner to be reimbursed by purchaser. App. \$1,200 to \$2,160. Sale after Feb. 1, 1969.

2 tracts, 40 A each. 9 miles west and north of Melville, Sweet Grass Cty. Access by Cty road and range trail over private land. Grazing pot. Improvements; fence, ditch, owner to be reimbursed by purchaser. Gently rolling foothills. Soil medium depth, rocky. Limited cultivation pot. App \$1,200 and \$1,400. Sale after Feb. 1, 1969.

41.96 A, 11 miles west and north of Melville, Sweet Grass Cty. Grazing pot. Access by Cty road, range trail over private land. Permitted fence through northeast corner. Owner to be reimbursed by purchaser. Rolling to steep foothills. Veg; grass-land. No stockwater. App \$840. Sale after Feb. 1, 1969.

NEVADA

304 A, 15 miles southeast of Eagleville, Calif., on Nevada state line. Level, gentle northeast slope. Soil fine sandy loam. Agricultural pot. Veg: big sage and greasewood. Utilities near; no legal access, physical access by $\frac{1}{2}$ mile jeep trail from State Hwy. 81. App \$2,350. Sale Feb. 5, 1969, Winnemucca D.O.

527.07 A, 45 miles northwest of Winnemucca. Level or gently sloping. Agricultural pot. Soils fine silts or clays. Veg: shade-scale, greasewood. Access via Cty road. Elec. App \$6,590. Sale Feb. 5, 1969, Winnemucca D.O.

129.49 A, crossed by U.S. Hwy. 95 south of McDermitt, on Oregon border. El. 4,400 ft. Generally level. Commercial development pot. Open use zoning. App \$7,100. Sale Feb. 5, 1969, Winnemucca D.O.

126.23 A, 3 miles southeast of Smith, Lyon Cty. Fairly level, sandy soil. Agricultural pot. Veg: sagebrush, Indian ricegrass. Utilities near. Access via Cty rd. App \$4,400. Sale Feb. 7, 1969, Carson City D.O.

160. A, 10 miles north of Ely, White Pine Cty. Agricultural pot. Soil gravelly to clay loam. Veg: sagebrush. Utilities near. Legal access by 4-wheel drive over public land. Physical access by $\frac{1}{2}$ mile dirt road across private land. App \$4,800. Sale Feb. 12, 1969, Ely D.O.

40 tracts, $2\frac{1}{2}$ A each, 30 miles east of Carson City, 5 miles west of Lake Lahontan recreation area. Generally level, homesite pot. Near U.S. Hwy. 50. Elec, tel. Sale Feb. 20, 1969, Carson City D.O.

2 tracts, 640 A each, 12 miles northeast of Elko. One rolling to hillocky, other generally level. Soils, deep loams. Elec, tel. 2 miles. 3 miles from Interstate Hwy. 80. Rural residential pot. App \$19,200, \$22,400. Sale Jan. 22, Reno L.O.

A, 6 miles east of Gardnerville, Douglas Cty. Rough, mountainous; shallow, rocky soil. El. 5,200 ft. Spring grazing pot. No stockwater. Zoned for forest conservation. Veg: pinyon-juniper, cheatgrass, annual grasses. Access by dirt road over public land. App \$3,000. Sale Jan. 22, Reno L.O.

NEW MEXICO

123.54 A, 2 miles northwest of Lordsburg. Nearly level grazing land with moderately deep silty clay loam; $\frac{1}{2}$ mile to elec. App \$30 per A.

80 A, 1 mile west of Caballo Dam, $\frac{1}{2}$ mile west of Interstate Hwy 25 on west side of Rio Grande Valley, Sierra Cty. 7 A partially leveled cropping lands, 73 A rough, hilly grazing lands. Elec and tel. No developed water, not within declared water basins. Wells on adjoining lands show underground water sufficient for irrigation. App \$4,400.

80 A, $2\frac{1}{2}$ mi southeast of Lordsburg. Nearly level grazing land with moderately deep clay soils; elec. App \$45 per A. 3 tracts, size ranges, 80 A, 3-4 miles south of Mule Creek, 45 miles northwest of Silver City, Grant Cty. Mountainous with shallow rocky soils; elec. App \$15 per A.

NORTH DAKOTA

40 A 13.5 miles south of Towner, McHenry Cty. Isolated; typical of sand hills with gently rolling dunes. Veg: grassland, dense clumps of aspen and scrub oak covering south half. No

cultivation pot, unfavorable soil. No stockwater. App \$700. Sale after Feb. 1, 1969.

40 A, $8\frac{1}{2}$ miles south of Rhame, Bowman Cty. Grazing pot. Access over private land. Moderately rolling. Veg: grassland. Fence on north, west sides of forty owned by lessee. Owner of improvements to be reimbursed by purchaser. App \$640. Sale after Feb. 1, 1969.

29.5 A, 26 miles south of Marmarth, Bowman Cty. Veg: native grasses. No range improvements. Stockwater from Little Missouri River. Access by range trail $\frac{1}{4}$ mile north of tract. App \$700. Sale after Feb. 1, 1969.

OREGON

350.11 A, 1 mile east of Boardman, access via paved Cty road. Sandy soil, veg sagebrush, rabbitbrush, cheatgrass. 10 A irrigated, farmed for alfalfa. App \$40 to \$50 per A.

240 A, 1 mile northwest of Rome. Access via unimproved Cty road. Slightly rolling, used for grazing. App \$10 to \$15 per A. 39 tracts, 40 to 500 A Morrow Cty. Grazing pot. Rolling to rough; no legal access. Semiarid climate. App \$10 to \$25 per A. 6 tracts totaling 2,880 A near Hermiston, Umatilla Cty. Dryland farming pot. Level to rolling; most tracts have legal access. App \$45 to \$55 per A.

WYOMING

320 A, 11 miles north of Medicine Bow, Carbon Cty. Access via dirt road to $\frac{1}{2}$ mi from tract. No legal access. Rolling sagebrush grassland. Short growing season. Soils, climate, topography preclude cultivation. App \$5,760.

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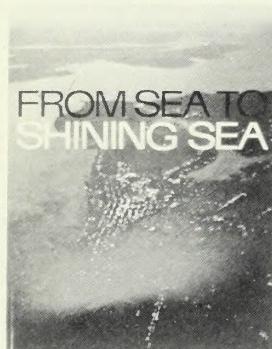
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